

## CLAIMS

What is claimed is:

- 5                   1.     A web page delivery system for dynamically generating a web page having at least one content element, the delivery system comprising:
  - a web/app server operative to receive a web page request from a user and to generate a web page and to deliver the web page to the user;
  - 10                   a preloader operative to receive a content element retrieval request from the web/app server and to deliver the at least one content element to the web/app server, in response to receiving the content element retrieval request; and
  - a profile server operative to receive a hint request from the
  - 15 preloader and to deliver a hint to the preloader;
  - wherein the preloader comprises a component cache and maintains the at least one content element in the component cache and delivers the at least one content element to the web server, in response to a determination that the hint indicates that the at least one content element will
  - 20 be needed by the web/app server to generate the web page.

2. The web page delivery system of Claim 1, wherein the preloader is further operative to receive a content element insertion request from the web/app server and to service the request, in response to receiving the content element insertion request.

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3. The web page delivery system of Claim 1, wherein the preloader further comprises a cache manager operative to receive the content element retrieval request and the content element insertion request and to determine whether the at least one content element resides in the component  
10 cache.

4. The web page delivery system of Claim 3 further comprising a secondary web/app server that is operative to send component insertion requests to the cache manager

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5. The web page delivery system of Claim 1, wherein the preloader further comprises a cache replacement manager operative to control a replacement policy of the component cache.

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6. A method for delivering a web page, the method comprising the steps of:

receiving a web page request, the web page request corresponding to a web page having at least one requested content element;

5 determining whether a tagged content element resides in a component cache, the tagged content element corresponding to the at least one requested content element;

generating a content response for each web page request, wherein the content response includes the tagged content element if the  
10 tagged content element resides in the component cache;

generating the requested content element if the tagged content element does not reside in the component cache;

storing a content element node in the component cache, in response to a determination that the tagged content element does not reside  
15 in the component cache, the content element node corresponding to the generated content element; and

delivering the web page comprising the at least one requested content element.

20 7. The method of Claim 6, further comprising the step of generating a hint request associated with the content element node, the hint request comprising the likelihood that the requested content element will be needed by a future web page request.

8. The method of Claim 7, further comprising the steps of receiving a hint response associated with the hint request, in response to the generation of the hint request; and

making a cache replacement decision, in response to receiving  
5 the hint response.

9. The method of Claim 8, wherein the cache replacement decision indicates whether the requested content element should be maintained in the component cache.

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10. The method of Claim 6, wherein the content response comprises an indication as to whether the tagged content element resides in the component cache.

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11. A method for caching a content element, the method comprising the steps of:

receiving a content element retrieval request corresponding to the content element;

5 sending a retrieval response, in response to the content element retrieval request, the retrieval response indicating whether the content element resides in a component cache;

receiving a content element insertion request corresponding to the content element;

10 sending an insertion response, in response to the content element insertion request, the insertion response indicating whether the content element was successfully inserted into the component cache;

determining whether the content element should reside in the component cache;

15 removing the content element from the component cache, in response to a determination that the content element should not reside in the component cache; and

20 associating the content element with a content element node and storing the content element and the content element node in the component cache, in response to a determination that the content element should reside in the component cache.

12. The method of Claim 11, wherein the content element node comprises a NodeID, a NavProb, and a NextNode.

13. The method of Claim 11, wherein the determination that the content element should not reside in the component cache is made by a content replacement manager.

5           14. The method of Claim 13, wherein the content replacement manager determines whether the content element should reside in the component cache by determining whether a second content element should replace the content element.

10           15. The method of Claim 13, wherein the content replacement manager determines whether the content element should reside in the component cache by determining how recently the content element has been referenced.

15           16. The method of Claim 13, wherein the content replacement manager determines whether the content element should reside in the component cache by determining the likelihood that the content element will be needed.

20           17. The method of Claim 16, wherein the content replacement manager determines that the content element should not reside in the component cache, in response to a determination that the content element is unlikely to be needed.

18. The method of Claim 16, wherein the content replacement manager determines that the content element should reside in the component cache, in response to a determination that the content element is likely to be needed.

19. A component cache data structure for storing a current content element, comprising:

a content element node associated with the current content element;

5 the content element node comprising a NodeID data field, a NavProb data field, a NextNode data field, a Timestamp data field, and a Content data field;

the NodeID data field comprising a PageID and a Code Block ID and uniquely identifying the current content element;

10 the NavProb data field comprising a conditional probability that the current content element will be needed to generate a web page;

the Timestamp data field comprising a time that the current content element was last accessed;

15 the Content data field containing a representation of the current content element; and

the NextNode data field comprising an array structure containing at least one destination NodeID representing a destination content element that is reachable from the current content element.



20. A method for delivering a web page having a content element that can be generated by a code block, the method comprising the steps of:

5 associating a tag with the code block in a dynamic script, wherein the tag identifies whether the code block is a cacheable code block;

determining whether the content element is contained in a component cache, in response to a determination that the code block is a cacheable code block;

10 executing the code block, in response to a determination that the code block is not a cacheable code block, thereby generating the content element; and

placing the content element in a web page buffer.